

VERBENA CABRERAE var. ANGUSTILOBATA Moldenke, var. nov.

Haec varietas a forma typica speciei lobis foliorum uniforme linearibus lineari-oblongisve anguste oblongisve recedit.

This variety differs from the typical form of the species in having the divisions of its leaf-blades uniformly linear (on the uppermost leaves), linear-oblong (on intermediate leaves), or narrowly oblong (on lower leaves), of uniform diameter throughout.

The type of the variety was collected by Gert Hatschbach (no. 23852) in the cerrado at Col. Paxixi, in the Municipality of Aquidauana, Mato Grosso, Brazil, on February 20, 1973, and is deposited in my personal herbarium at Plainfield, New Jersey. The collector describes the plant as erect, 40 cm. tall, with violet-colored flowers.

ADDITIONAL NOTES ON THE GENUS VERBENA. XX

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional bibliography: Gaines & Swan, Weeds East. Wash. 230, 231, & 349. 1972; Anon., Sat. Review World Hov. 20: 33. 1973; Frohne & Jensen, System. Pflanzenr. 203, 261, & 305. 1973; A. Hansen, Cuat. Bot. Canar. 18-19: 13. 1973; Hocking, Excerpt. Bot. A.21: 116 & 117. 1973; Jackson & Perkins, Seedbook 1972-1973: 18. 1973; Rickett, Wild Fls. U. S. 6 (3): 542-546 & 783, pl. 195 & 196. 1973; Rogerson, Bull. Torrey Bot. Club 100: 192. 1973; W. A. Burpee, Burpee Seeds 1974: 54. 1974; Lasser, Braun, & Steyerl., Act. Bot. Venez. 9: 36. 1974; Moldenke, Phytologia 28: 104-120. 1974.

A Verbena perfume is offered for sale by Caswell-Massey Company, Ltd., of New York.

VERBENA ABRAMSI Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.21: 117. 1973; Moldenke, Phytologia 28: 109-110. 1974.

VERBENA AMBROSIFOLIA Rydb.

Additional bibliography: Rickett, Wild Fls. U. S. 6 (3): 544, [545], & 783, pl. 196. 1973; Moldenke, Phytologia 28: 110-111. 1974.

Illustrations: Rickett, Wild Fls. U. S. 6 (3): [545], pl. 196 (in color). 1973.

VERBENA BIPINNATIFIDA Nutt.

Additional bibliography: Rickett, Wild Fls. U. S. 6 (3): [543], 544, & 783, pl. 195. 1973; Moldenke, Phytologia 28: 112-114. 1974.

Additional illustrations: Rickett, Wild Fls. U. S. 6 (3): [543], pl. 195 (in color). 1973.

The Abedin 2643, Boulos s.n. [July 1952], Drar & Mahdi 2525, Hassib s.n. [7/3/1929] & s.n. [22/4/1941], Hellendoorn s.n. [18/7/1965], Herb. Univ. Kahir. s.n., Sisi s.n. [30/5/1973], G. Täckholm s.n. [October 1925], and V. Täckholm s.n. [2/11/1959], distributed as V. bipinnatifida, are actually all V. tenuisecta Briq.

VERBENA BONARIENSIS L.

Additional bibliography: A. Hansen, Cuad. Bot. Canar. 18-19: 13. 1973; Lasser, Braun, & Steyerl., Act. Bot. Venez. 9: 36. 1974; Moldenke, Phytologia 28: 114-117. 1974.

Lasser, Braun, & Steyerl. (1974) record this species as cultivated in Venezuela. The H. N. Moldenke 8551, distributed and previously cited by me as V. bonariensis, is actually var. conglomerata Briq., while Balakrishnan NBK.413 is V. rigida Spreng.

Additional citations: PAKISTAN: Northwest Provinces: S. Khan 508 (Kh).

VERBENA BONARIENSIS var. CONGLOMERATA Briq.

Additional bibliography: Moldenke, Phytologia 28: 116-117. 1974.

Additional citations: CULTIVATED: New York: H. N. Moldenke 8551 (N).

VERBENA BRACTEATA Lag. & Rodr.

Additional bibliography: Moss, Fl. Alberta, pr. 1, 397 & 545 (1959), pr. 2, 397 & 545 (1964), and pr. 3, 397 & 545. 1967; Gaines & Swan, Weeds East. Wash. 230, 231, & 349. 1972; Rickett, Wild Fls. U. S. 6 (3): [543], 544, & 783, pl. 195. 1973; Moldenke, Phytologia 28: 117-119. 1974.

Additional illustrations: Gaines & Swan, Weeds East. Wash. 231 (in color). 1973; Rickett, Wild Fls. U. S. 6 (3): [543], pl. 195 (in color). 1973.

Halse (1973) cites Burgess 748, Halse 154, 231, & 286, and Ranzoni 169 from Canyon de Chelly. Blewitt (1926) describes the species as "rare" in waste ground in New Haven County, Connecticut, where it is said to be "Adventive from the West" and blooms in July and August. Fell (1955) has this to say about the plant as it occurs in Winnebago County, Illinois: "A decumbent weed that is common on railroads, roads and in waste places. A hybrid on the C. & N. W. Ry. tracks near U. S. Rt. No. 51 tends to be more upright, the bracts are short, and the leaves less divided (X perriana). X deamii Moldenke, stout and semidecumbent, resembling V. stricta but having bracted flowers, is uncommon on roadsides."

VERBENA BRASILIENSIS Vell.

Additional bibliography: Rickett, Wild Fls. U. S. 6 (3): 546 & 783. 1973; Moldenke, Phytologia 28: 116 & 119-120. 1974.

VERBENA CABRERAE var. ANGUSTILOBATA Moldenke

Bibliography: Moldenke, Phytologia 28: 195. 1974.Citations: BRAZIL: Mato Grosso: Hatschbach 23852 (Z--type).

VERBENA CALIFORNICA Moldenke

Additional bibliography: Moldenke, Phytologia 24: 217. 1972.Additional citations: CALIFORNIA: Tuolumne County: Moldenke & Moldenke 25758 (Gz, Kh).

VERBENA CALLIANTHA Briq.

Additional bibliography: Moldenke, Phytologia 28: 120. 1974.Hatschbach describes this plant as repent and found it growing in wet sandy campos. The corollas on Hatschbach & Guimarães 25509 are described as having been "lilac" in color when fresh.Additional citations: BRAZIL: Paraná: Hatschbach & Guimarães 25509 (Ld).

VERBENA CANADENSIS (L.) Britton

Additional synonymy: Glandvlaria caroliniensis Raeusch., Nom. Bot., ed. 3, 172. 1797. Verbena aubletia L. f. ex Desf., Tabl. Écol. Bot., ed. 2, 66. 1815. Verbena aubletia drummondii Paxt., Pock. Bot. Dict., ed. 1, 328. 1840.Additional & emended bibliography: Raeusch., Nom. Bot., ed. 3, 3 & 172. 1797; Desf., Tabl. Écol. Bot., ed. 1, 54. 1804; Willd., Enum. Pl. Hort. Berol. 2: 634. 1809; Desf., Tabl. Écol. Bot., ed. 2, 66. 1815; S. Ell., Sketch, pr. 1 & 2, 2: 96--97 (1821) and 2: 742. 1824; Mohl, Ann. Sci. Nat., ser. 2, 3: 319. 1835; Paxt., Pock. Bot. Dict., ed. 1, 328. 1840; Schau., Linnaea 20: 478. 1847; Paxt., Pock. Bot. Dict., ed. 2, 328. 1849; Dupuis, Nouv. Fl. Usuel. & Méd. 2: 80. 1860; T. H. Everett, Gard. Chron., ser. 3, 87: 144. 1930; Rydb., Fl. Prairies & Plains, pr. 1, 677, 678, & 967. 1932; Wangerin in Just, Bot. Jahresber. 58 (1): 845 [275]. 1938; Fedde in Just, Bot. Jahresber. 58 (2): 668. 1939; Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 573. 1941; Evers, Ill. Nat. Hist. Surv. Bull. 26: 421 & 436. 1955; Foley, Ground Covers, pr. 1, 134--135. 1961; Solbrig in Heywood, Mod. Meth. Pl. Tax. 87--89. 1968; El-Gazzar & Wats., New Phytol. 69: 463, 483, & 485, fig. 30. 1970; S. Ell., Sketch, pr. 3, 2: 96--97 & 742. 1971; Rydb., Fl. Prairies & Plains, pr. 2, 2: 677, 678, & 967. 1971; Amaral Franco in Tutin & al., Fl. Eur. 3: 122. 1972; Encke & Buchheim in Zander, Handwörterb. Pflanzennam., ed. 10. 1972; Foley, Ground Covers, pr. 2, 134--135. 1972; Skinner, Ornament. Pl. Coastal Northw. 75. 1972; Tutin in Tutin & al., Fl. Eur. 3: 369. 1972; Moldenke, Phytologia 23: 367--368, 414, 428, 431, & 434--437 (1972), 24: 237 & 253 (1972), and 25: 240 & 244. 1973; Anon., Biol. Abstr. 55 (9): B.A.S.I.C. S.272. 1973; Rickett, Wild Fls. U. S. 6 (3): [543], 544, & 783, pl. 195. 1973; Sperka, Garden. Guide 187--188. 1973; Moldenke, Phytologia 28: 110. 1974.Additional illustrations: T. H. Everett, Gard. Chron., ser. 3, 87: 144. 1930; El-Gazzar & Wats., New Phytol. 69: 463, fig. 30. 1970; Sperka, Gardn. Guide 187. 1973; Rickett, Wild Fls. U. S. 6

(3): [543], pl. 195 (in color). 1973.

The type of Buchnera canadensis L., on which this taxon is based, was collected in Virginia [not Canada!] according to Linnaeus (1767), who says for it merely "Habitat in Virginia".

Recent collectors have found Verbena canadensis growing in low grassy ground by roadsides, in cedar glades, on dry ledges on bluffs, in sand along roadsides near oak woodlands, in sandy soil on open sunny slopes, on open southerly hillslopes, among limestone rocks in rather open woods, and on sand dunes on bluffs adjoining the ocean. My wife and I found it in open sunny dry woodlands composed of deciduous trees and shrubs. The stems are described as rooting at the nodes and the petals as shallowly cleft and somewhat crenate. The corolla is described as "rose-purple" on Dress 2318, "lavender" on Clausen & Clausen 5753 and I. Collins s.n. [July 29, 1946], "purple" on G. H. M. Lawrence 193, "soft pale blue-violet" on Dress, Lawrence, & Moore 672, "purple, with reddish eye" on Lundell & Lundell 11004, "lavender, with reddish eye" on Lundell & Lundell 10945, "magenta, with deeper ring at mouth of tube" on H. E. Moore 636, and "RHS [Royal Horticultural Society] Bishops Violet 3 $\frac{1}{4}$ to 3 $\frac{1}{2}$ " on Peele 651.

Evers (1955) found the plant "common on rocky bluffs" and records it from Monroe and Union Counties, Illinois. French vernacular names recorded for it are "verveine de Miquelon", "verveine à bouquets", and "verveine de Drummond".

Jacquin, in Hort. Bot. Vindob. 2: 82 (1772), says "Sub Aubletiae nomine a Dickio semina habui, quae genuina Verbenae tetrandrae species est, ut ab hac nequeat ulla nota avelli. In Peruvia & in Florida sponte crescere, illustris Linnaeus mihi autor est." A photograph of this original description of V. aubletia and of the illustration accompanying it, is in the L. H. Bailey Herbarium at Ithaca, New York. Paxton (1849) states that the species was introduced into cultivation in England soon after or in 1774.

Solbrig (1968) informs us that the normal pollen fertility rate is 98 percent in V. canadensis.

Sperka (1973) calls the species "rose verbena" and speaks of it as a garden subject as follows: "2 to 3 feet long. A trailing vine-type of plant, spreading to make a circle. Clusters of rose-colored flowers are held above deeply toothed, ovate, medium-green leaves that are hairy. Where the soil is moist, the reclining branches root at the nodes as they spread. This verbena is found in sunny, rocky prairies where the soil is lean and sandy. It is native in the more southern and western parts of Wisconsin than mine" [I have not seen any material at all of this species from Wisconsin nor any other record before this of its being "native" there] "but I have found it hardy with a cover of mulch in winter." She asserts that it blooms from "Late May until heavy frosts. Pick the spent flowers to encourage bloom." As to its soil preferences, she says to use "Poor, sandy soils or a fertile, sandy loam with good drainage. Add sand to very fertile, heavy

soil. This plant does best on a lean diet. . . [it] must be planted in full sun for abundant bloom. I⁺ ; best suited for the prairie, a sunny garden, or groundcover . . . a sunny bank. . . In areas where the temperatures dip far below zero it is best to plant in spring. In warmer climates, fall planting is practical. . . Very coarse, fibrous roots become wiry with age. The nodes along the trailing branches aboveground send down new roots wherever they touch the damp soil. . . . Space 3 feet apart. For a dense groundcover, space only 2 feet apart. Set the crowns at soil level. Mulch in cold areas during the winter months. When plants become too crowded, remove some of the older ones. Merely clip the branch and dig up the unwanted plants. . . . Pot-grown nursery stock or stock grown in the field for one season have vigorous young root systems. Select only the younger plants for division. Stem cuttings in July are the easiest method of propagation. Seeds are often slow to germinate, and seedlings bloom the second year. The plant self-sows." She further comments that this species "makes a fine groundcover for a rocky, sandy area that seems to grow little except weeds."

The Dress 2876, distributed as V. canadensis, is actually V. bipinnatifida Nutt., while Hopkins, MacDowell, & Copeland 6390 is V. pumila Rydb.

Additional citations: GEORGIA: Baldwin Co.: Moldenke & Moldenke 26974 (Ac, Ba, Ld, Ps--1338, Ws). Sumter Co.: Dress, Lawrence, & Moore 672 (Ba). FLORIDA: Duval Co.: G. H. M. Lawrence 193 (Ba). ALABAMA: Madison Co.: R. M. Harper 3958 (Ba). Tuscaloosa Co.: Clausen & Clausen 5753 (Ba). OHIO: Clermont Co.: E. L. Braun s.n. [V-4-12] (W--2712372). Hamilton Co.: E. L. Braun s.n. [IV-23-05] (W--2712371). KANSAS: Woodson Co.: Lathrop 876 (Bl--118820). MISSOURI: Saint Francois Co.: Dress 2318 (Ba). Taney Co.: E. L. Braun s.n. [July 9, 1938] (W--2712370). ARKANSAS: Hot Spring Co.: Demaree 18880 (Ba). LOUISIANA: Ouachita Par.: R. D. Thomas 6516 (Bl--214452). OKLAHOMA: Ottawa Co.: G. W. Stevens 2340 (Ba-photo). TEXAS: Brazos Co.: Fryxell 1265 (N). Dallas Co.: J. Reverchon 2533 (Ba--photo). Freestone Co.: Lundell & Lundell 11004 (Mi, Mi). Harris Co.: Tharp & Barkley 17030 (Bl--91491). Jasper Co.: Cory 52864 (Bl--90471). Smith Co.: H. E. Moore 636 (Ba). Tyler Co.: Lundell & Lundell 10945 (Mi). CULTIVATED: New Jersey: I. Collins s.n. [July 29, 1941] (Ba). New York: H. M. Fox s.n. [1941] (Ba); Herb. Bailey Hort. s.n. [1948] (Ba--photo). Pennsylvania: Peele 651 (Ba). LOCALITY OF COLLECTION UNDETERMINED: Herb. Linnaeus G.790, S.7 [Habitat in Virginia] (Ba--photo of type); Rugel s.n. [Ad vias et margines agrorum, per Georgiam infer. et Floridam med., Mart. 1843] (Bl--97105). MOUNTED ILLUSTRATIONS: Jacq., Hort. Bot. Vindob. 1: pl. 176 & 2: 82. 1772 (Ba-photo).

VERBENA CANADENSIS (L.) Britton x V. AMBROSIFOLIA Rydb.

Synonymy: "Glandularia canadensis x G. ambrosifolia" Solbrig

in Heywood, Mod. Meth. Pl. Tax. 88. 1968. "Verbena ambrosifolia Rydb. x V. canadensis (L.) Britton" ex Moldenke, Phytologia 26: 376, in syn. 1973.

Bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968; Moldenke, Phytologia 26: 373 & 376. 1973.

VERBENA CANADENSIS (L.) Britton x V. ELEGANS H.B.K.

Synonymy: Glandularia canadensis x elegans Solbrig in Heywood, Mod. Meth. Pl. Tax. 87. 1968. "Glandularia canadensis x G. elegans" Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968. "Verbena elegans H.B.K. x V. canadensis (L.) Britton" ex Moldenke, Phytologia 26: 373 & 376, in syn. 1973.

Bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 87 & 88. 1968; Moldenke, Phytologia 26: 373 & 376. 1973.

Solbrig (1968) reports the pollen fertility in this as yet unnamed hybrid is actually 98 percent!

VERBENA CANADENSIS (L.) Britton x V. MARITIMA Small

Synonymy: Glandularia canadensis x maritima Solbrig in Heywood, Mod. Meth. Pl. Tax. 87. 1968. "Glandularia canadensis x G. maritima" Solbrig ex Moldenke, Phytologia 26: 373, in syn. 1973. "Verbena maritima Small x V. canadensis (L.) Britton" ex Moldenke, Phytologia 26: 376, in syn. 1973.

Bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 87. 1968; Moldenke, Phytologia 26: 373 & 376. 1973.

Solbrig (1968) reports the pollen fertility in this as yet unnamed hybrid as 61 percent. Since these two species overlap in their natural ranges in at least five counties of Florida, this hybrid may be expected in the wild and deserves nomenclatural recognition.

VERBENA CANADENSIS (L.) Britton x V. PERUVIANA (L.) Britton

Synonymy: "Glandularia canadensis x G. peruviana" Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968. "Verbena peruviana (L.) Britton x V. canadensis (L.) Britton" ex Moldenke, Phytologia 26: 377, in syn. 1973.

Bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968; Moldenke, Phytologia 26: 373 & 376. 1973.

VERBENA CANADENSIS (L.) Britton & V. TAMPENSIS Nash

Synonymy: "Glandularia canadensis x G. tampensis" Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968. "Verbena tampensis Nash x V. canadensis (L.) Britton" ex Moldenke, Phytologia 26: 377, in syn. 1973.

The natural ranges of these two species overlap in at least 4 counties of Florida, so the hybrid may be expected in the field and deserves nomenclatural recognition.

VERBENA CANESCENS H.B.K.

Additional synonymy: Verbena canescens H.B.K. ex Sanchez

Sanchez, Fl. Val. Mex., ed. 1, 327, sphalm. 1969.

Additional & emended bibliography: Paxt., Pock. Bot. Dict., ed. 1, 328. 1840; Schau., Linnaea 20: 477. 1847; Paxt., Pock. Bot. Dict., ed. 2, 328. 1849; Gibert, Enum. Fl. Montevid. 43. 1873; Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1941; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 327-328, fig. 262-A. 1969; El-Gazzar & Wats., New Phytol. 69: 458, 483, & 485, fig. 7. 1970; Rzedowski & McVaugh, Anal. Esc. Nac. Cienc. Biol. 19: 35 & 41. 1972; Moldenke, Phytologia 24: 21, 45, & 54 (1972) and 25: 234. 1973; Rickett, Wild Fls. U. S. 6 (3): 544 & 783. 1973.

Additional illustrations: Sanchez Sanchez, Fl. Val. Mex., ed. 1, fig. 262-A. 1969.

Recent collectors have found this plant growing in Abies woods, in "matorral" of Cordia boissieri, in trailside thickets, among vegetation of cacti, shrubs, and small trees, and on highly overgrazed dry roadsides adjacent to thorn-scrub woodlands with Opuntia and legumes. Cruz Cisneros found it in "abanico aluvial con pastizal alterado de Hilaria cenchroides, Bouteloua hirsuta y Erioneuron avenaceus." They have encountered it at altitudes of 300 to 2700 meters. Sanchez Sanchez (1969) informs us that it is "Abunda en los Remedios y la Sierra de Guadalupe" in the Valley of Mexico, flowering there from August to October.

The corollas are described as "lavender" on H. E. Moore 2746, "blue" on J. Rzedowski 24811, and "purple" on Roe & Rose 2418 and J. Rzedowski 24834. Paxton (1840) reports that the species was introduced into cultivation in England in 1824.

Gibert (1873) reduces V. canescens to synonymy under V. intermedia Gill. & Hook., a completely untenable disposition!

The Ifaguez 74, cited below, is a mixture with V. ciliata Benth., while Hidalgo & Anda s.n. [25/VI/1967] is a mixture with V. elegans H.B.K.

Additional citations: TEXAS: Bandera Co.: Johnson & Webster 566 (Bl-32870). MEXICO: Hidalgo: Hidalgo & Anda s.n. [25/VI/1967] (Ba); H. E. Moore 2746 (Ba). México: Cruz Cisneros 959 (Ws); Ifaguez 74, in part (Ws). Oaxaca: Messer 207a (Mi). San Luis Potosí: J. Rzedowski 24811 (Ws), 24834 (Ba). Tamaulipas: Roe & Rose 2418 (Ws).

VERBENA CANESCENS var. ROEMERIANA (Scheele) Perry

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1941; Moldenke, Phytologia 24: 21 & 45. 1972.

The corollas are described as "purple" on C. L. Lundell 10956 & 10986, "purplish" on C. L. Lundell 10774, and "lavender with whitish eye" on C. L. Lundell 10972.

Additional citations: TEXAS: Brown Co.: J. Reverchon s.n. [Curtiss 1961] (Mi). Cameron Co.: C. L. Lundell 10774 (Mi). Kinney Co.: Strother 264 (Bl-198049). Medina Co.: C. L. Lundell 10986 (Mi). Sutton Co.: Rohrbaugh 385 (Bl-174977). Uvalde Co.: C. L.

Lundell 10956 (Mi), 10972 (Mi).

VERBENA CANIUENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 23: 220. 1972.

Additional citations: BRAZIL: Paraná: Hatschbach 22284 (Ba).

VERBENA CAROLINA L.

Emended synonymy: Verbena caroliniana L. apud Desf., *Tabl. Écol. Bot.*, ed. 1, 54. 1804.

Additional bibliography: Raeusch., *Nom. Bot.*, ed. 3, 2. 1797; Desf., *Tabl. Écol. Bot.*, ed. 1, 54. 1804; Willd., *Enum. Pl. Hort. Berol.* 2: 634. 1809; Desf., *Tabl. Écol. Bot.*, ed. 2, 66. 1815; Paxt., *Pock. Bot. Dict.*, ed. 1, 328. 1840; Schau., *Linnaea* 20: [476]—477. 1847; Paxt., *Pock. Bot. Dict.*, ed. 2, 328. 1849; Greene & Blomquist, *Fls. South 109*. 1953; Sanchez Sanchez, *Fl. Val. Mex.*, ed. 1, 327, fig. 262-B. 1969; Moldenke, *Biol. Abstr.* 56: 6374. 1972; Moldenke, *Phytologia* 23: 220, 222, 225, 268, 292, 293, & 302 (1972) and 24: 40, 126, & 141. 1972; Hocking, *Excerpt. Bot. A.21*: 117. 1973.

Additional illustrations: Sanchez Sanchez, *Fl. Val. Mex.*, ed. 1, fig. 262-B. 1969.

The "Verbena carolina L." of Lowe (1921) is actually Stylodon carneus (Medic.) Moldenke, as is also the "Verbena caroliniana" of Greene & Blomquist (1953). Neither has anything to do with the true V. carolina of Linnaeus. Raeuschel (1797) says that V. carolina L. is from "Carolin.", but actually it is a Mexican and Central American species, coming north in the United States to Arizona and Nevada. The French vernacular name, "verveine de Caroline" is, therefore, misleading. Paxton (1840) states that it was introduced into cultivation in England in 1820 (the so-called V. veronicaefolia H.B.K. in 1825) but was to be regarded as "worthless".

Recent collectors have found V. carolina growing at the edge of cultivated fields, on roadsides and dry open roadsides, in pinelands, on riverbanks, in secondary vegetation and in oak woods, while Proctor refers to it as a "dooryard weed". Salinas M. encountered it at "orilla del panteón" and Martínez Calderón found it in soil "con grava volcanicas". It has been found in fruit in March (in addition to the months previously reported by me). González Tamayo says of it: "uso horchata para la bilis" and found it to be scarce in Jalisco. Sanchez Sanchez (1969) refers to the plant as "Es una maleza mexicana, florece los meses de junio y julio" and reports it from the pedregal in the Valley of Mexico.

The corollas are said to have been "blue" on Contreras 10972, S. López 89, C. L. Lundell 12209, and M. Nee 217, "clear-blue" on González Tamayo 168, "pale-blue" on Lundell & Lundell 12355, "white, tinged blue" on Lundell & Lundell 12391, "violet" on González Tamayo 376, and "purple" on Harker & Mellowes 35.

The Marcks & Marcks 794, distributed as V. carolina, is actual-

ly V. litoralis H.B.K., Schultes & Reko 237 is a mixture with V. litoralis, while H. H. Rusby 780 is V. macdougalii Heller.

Additional citations: MEXICO: Durango: Weber & Charette 11773 (Bl—176170). Federal District: S. López 89 (Ws); M. Nee 217 (Ws). Hidalgo: Lundell & Lundell 12391 (Mi). Jalisco: González Tamayo 168 (Mi), 376 (Mi); Harker & Mellowes 35 (Ws). México: C. L. Lundell 12209 (Mi); Lundell & Lundell 12355 (Mi); Salinas M. 85 (Ws). Oaxaca: Schultes & Reko 237, in part (Oa). Veracruz: Martínez Calderón 1765 [Rec. Inf. D005182] (Mi). GUATEMALA: Baja Veracoaz: Contreras 10972 (Ld, Ld). El Quiché: G. R. Proctor 25004 (Ld, Ld).

VERBENA CAROLINA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, *Phytologia* 23: 185—186. 1972.

Recent collectors describe this as a "scarce annual herb" or "plant woody, 2 ft. tall", with white flowers, and have found it growing in secondary vegetation and in oak woods, at altitudes of 5 to 1600 meters. González Tamayo refers to it as abundant in Jalisco.

Additional citations: MEXICO: Jalisco: González Tamayo 304 (Mi). Oaxaca: Vilas 342 (Ws). Veracruz: Martínez Calderón 1352 [Rec. Inf. D000805] (Mi).

VERBENA CATHARINAE Moldenke

Additional bibliography: Moldenke, *Phytologia* 23: 186. 1972.

Recent collectors have found this plant growing on rocky campos. The corollas are said to have been "violet" in color on Hatschbach, Smith, & Klein 28313.

Additional citations: BRAZIL: Santa Catarina: Hatschbach, Smith, & Klein 28313 (Ld).

VERBENA CILIATA Benth.

Additional synonymy: Glandularia ciliata Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 89. 1968.

Additional bibliography: Schau., *Linnaea* 20: 477. 1847; Fedde & Schust. in Just, *Bot. Jahresber.* 60 (2): 575. 1941; Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 89. 1968; Sanchez Sanchez, *Fl. Val. Mex.*, ed. 1, 328, fig. 262-C. 1969; Moldenke, *Phytologia* 24: 21, 51, 54, & 242 (1972) and 28: 113. 1974.

Additional illustrations: Sanchez Sanchez, *Fl. Val. Mex.*, ed. 1, fig. 262-C. 1969.

Recent collectors describe this plant as 12.5—30 cm. tall or procumbent, spreading, forming clumps to 4 feet in diameter. They have encountered it in xerophilous "matorral" with Opuntia and Agave on volcanic slopes, on "campo labrado", in abandoned cultivated ground, and in wet loam of arroyos. It is referred to as "scarce" in the state of México by Rebolledo Vélez and in Jalisco by González Tamayo. Padilla found it on "ladera andesítica", while Roe, Roe, & Mori collected it on grazed roadsides and in

drainage ditches with Yucca, Bouvardia, and cacti in an area of mesquite-grassland now becoming desert. The Marcks encountered it in open pine forests coated with epiphytic lichens on thin black soils of a shallow former lake bed, the understory being composed of tufted grasses and dwarfed alpine herbs with bulbous underground storage organs. Sanchez Sanchez (1969) describes the plant as a "Maleza mexicana, que florece de julio a octubre", the corollas a violet when fresh, and inhabiting the "Desierto" areas in the Valley of Mexico.

The corollas are described as "lavender" on Roe, Roe, & Mori 23, "violet" on González Tamayo 146 & 250, "blue-violet" on Rebolledo Vélez s.n. [20.VIII.1967], "blue-purple" on Stuessy 959, "purple" on Genelle & Fleming 824, Lyonnet 2972, and Vilas 325, and "clear-violet" on González Tamayo 193.

The Iñiguez 74 collection is a mixture with V. canescens H.B.K. The Spellenberg & Spellenberg 3062 and W. A. Weber 3303, distributed as V. ciliata, are actually V. ambrosifolia Rydb., Marcks & Marcks 1231 is V. ciliata var. longidentata Perry, while Chilton s.n. [3/25/48] and Lehto, Brown, Nash, & Pinkava 10646 are V. gooddingii Briq., C. L. Hitchcock 25540 is V. gooddingii var. nepetifolia Tidestr., and Reverchon s.n. [Curtiss 1963**] and Ruth 110 are V. pumila Rydb.

Additional citations: ARIZONA: Gila Co.: Moldenke & Moldenke 27916 (Ac, Ld). Pinal Co.: Thorner s.n. [Oracle, May 28, 1905] (N). MEXICO: Chihuahua: Stuessy 959 (Bl—236250, Ws), 965 (Bl—236233). Coahuila: Roe, Roe, & Mori 23 (Ws). Durango: Matuda 38528 (Ac); Marcks & Marcks 1231 (Mi). Federal District: Lyonnet 2972 (W—2636373). Guanajuato: Genelle & Fleming 824 (N). Hidalgo: García Saucedo 2607 (Ws). Jalisco: González Tamayo 146 (Mi), 193 (Mi), 250 (Mi). México: E. R. García 60 (Ws); Iñiguez 74, in part (Ws); Padilla 117 (Ws); Rebolledo Vélez s.n. [20.VIII.1967] (Ws). Oaxaca: Vilas 325 (Ws). Puebla: Guerra 16 (Ws). Zacatecas: Rinehart 7346 (Mi).

VERBENA CILIATA var. LONGIDENTATA Perry

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1941; Moldenke, Phytologia 23: 188—190 & 192 (1972), 24: 51 (1972), and 28: 113. 1974.

Recent collectors have found this plant growing in sandy-loam soil of oak-pine associations and in an open pine forest coated with epiphytic lichens and on thin black soils of a former shallow lake bed, the understory consisting of tufted grasses and dwarfed alpine herbs with bulbous underground storage organs, at 2700 feet altitude. Fosberg describes the plant as prostrate, "common locally on flat open roadside, almost bare soil". The corollas are said to have been "purple" on F. R. Fosberg 44661.

Additional citations: TEXAS: Cameron Co.: C. L. Lundell 10656

(Ml). Grimes Co.: L. C. Higgins 3951 (Ml). San Patricio Co.: F. R. Fosberg 44661 (W--2677406). Zapata Co.: Novoa & Cantu 18a (Bl--210100). MEXICO: Durango: Marcks & Marcks 1231 (Ws).

VERBENA CILIATA var. PUBERA (Greene) Perry

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1941; Moldenke, Phytologia 23: 188 & 190 (1972) and 24: 51. 1972.

Additional citations: NEW MEXICO: Catron Co.: Weber & Salamun 12771 (Bl--201253).

VERBENA CLAVATA Ruiz & Pav.

Additional & emended synonymy: Verbena clvaata Ruiz & Pav. ex Pers., Syn. Pl. 3: 346, sphalm. 1819. Verbena clvaara Ruiz & Pav. ex Moldenke, Fifth Summ. 2: 663, in syn. 1971.

Additional bibliography: Moldenke, Phytologia 23: 190--191 & 240 (1972) and 25: 244. 1973.

VERBENA CLOVERAE Moldenke

Additional bibliography: Moldenke, Phytologia 23: 220, 221, 242, & 376 (1972) and 24: 44, 45, & 139. 1972.

The corollas are said to have been "lavender" on C. L. Lundell 10823 and on Lundell & Lundell 10843.

Additional citations: TEXAS: Brooks Co.: C. L. Lundell 10823 (Ml). Kenedy Co.: Lundell & Lundell 10843 (Ml). Starr Co.: Clover 1618 (Tu--98742--isotype). Zapata Co.: Barrera 5 (Bl--197941); M. Gonzalez 5 (Bl--209416); Gonzalez & Gutierrez 33 (Bl--197938).

VERBENA COCHABAMBENSIS Moldenke

Additional bibliography: R. C. Foster, Contrib. Gray Herb. 184: 170. 1958; Moldenke, Phytologia 23: 193. 1972.

VERBENA CORYMBOSA Ruiz & Pav.

Additional bibliography: Wangerin & Krause in Just, Bot. Jahresber. 60 (1): 754 [372] & 823. 1941; Moldenke, Phytologia 23: 260. 1972; F. Perry, Fls. World 303 & 320. 1972.

Hatschbach encountered this plant growing in "brejo". The corolla is described as having been "violet" in color on Hatschbach 28316.

Additional citations: BRAZIL: Paraná: Hatschbach 28316 (Ld, N).

VERBENA CRITHMIFOLIA Gill. & Hook.

Additional bibliography: Moldenke, Phytologia 24: 21 & 30. 1972.

The corollas are said to have been "violet" in color on Krapovickas, Cristóbal, Mroginski, & Fernandez 22321 and the leaves are narrower than is usual for this species.

Additional citations: ARGENTINA: La Pampa: Krapovickas, Cristóbal, Mroginski, & Fernandez 22321 (Ld), 22598 (Ld). Río Negro: Krapovickas, Cristóbal, Mroginski, & Fernandez 22447 (Ld).

xVERBENA CROOKSHANKSI Moldenke

Additional bibliography: Rydb., Fl. Prairies & Plains, pr. 1, 678 (1932) and pr. 2, 2: 678. 1971; Moldenke, Phytologia 23: 195 & 435. 1972.

xVERBENA DEAMII Moldenke

Additional bibliography: Rydb., Fl. Prairies & Plains, pr. 1, 678. 1932; Fell, Fl. Winnebago Co. 122. 1955; Rydb., Fl. Prairies & Plains, pr. 2, 2: 678. 1971; Moldenke, Phytologia 23: 196. 1972.

Fell (1955) comments that "X deamii Moldenke, stout and semi-decumbent, resembling V. stricta but having bracted flowers, is uncommon on roadsides" [in Winnebago County, Illinois].

VERBENA DELTICOIA Small

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1941; Moldenke, Biol. Abstr. 54: 1194. 1972; Moldenke, Phytologia 23: 221-222, 226, 237, & 278 (1972) and 24: 224. 1972.

The J. Rzedowski 27859, distributed as V. delticola, is actually V. elegans var. asperata Perry.

Additional citations: TEXAS: Cameron Co.: M. C. Johnston 54150 (Bl-91999); C. L. Lundell 10680 (Mi). MEXICO: Nuevo León: Pringle 11843 (Bl-149849).

VERBENA DISSECTA Willd.

Additional & emended bibliography: Gibert, Enum. Pl. Montevid. 43. 1873; Rambo, An. Bot. Herb. Barb. Rodr. 1: 123. 1949; R. C. Foster, Contrib. Gray Herb. 184: 170. 1958; Cain, Man. Veg. Anal., pr. 1, 229. 1959; Solbrig in Heywood, Mod. Meth. Pl. Tax. 89. 1968; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 838 & xix. 1971; Cain, Man. Veg. Anal., pr. 2, 229. 1971; Moldenke, Phytologia 24: 217 & 233. 1972.

Recent collectors have encountered this plant "among grass and weeds....flowers with strong but not unpleasant perfume." The corollas are said to have been "purple" on Eyerdam & Beetle 22317 and "purple-pink" on Eyerdam & Beetle 23039. The Morong 219, distributed as V. dissecta, is actually V. tenuisecta Briq. The Herb. Humboldt specimen cited below is deposited at Berlin.

Additional citations: CHILE: Province undetermined: Née s.n. [Herb. Humboldt] (Ba-photo of isotype). ARGENTINA: Buenos Aires: Eyerdam & Beetle 23039 (Ba). Catamarca: Brizuela 546 (Bl-105030), 1037 (Bl-105029). Córdoba: Cuezzo 901 (Bl-105031). Jujuy: Eyerdam & Beetle 22317 (Ba). Santa Fé: Kuntze s.n. [Ceres, Oct. 1892] (Ba-photo).

VERBENA DOMINGENSIS Urb.

Additional bibliography: Moldenke, Phytologia 23: 260. 1972.

Curtis collected this plant in open pine forests.

Additional citations: HISPANIOLA: Haiti: J. T. Curtis s.n. [July 27, 1944] (Ws).

VERBENA DUSENII Moldenke

Additional bibliography: Moldenke, *Phytologia* 23: 224—225. 1972.

Hatschbach describes this plant as procumbent or as an erect herb, 50 cm. tall. He found it growing in "brejo", flowering in September and November. The corollas on Hatschbach 27058 are said to have been "lilac" and on 25322 as "dark-lilac" in color when fresh.

Additional citations: BRAZIL: Paraná: Hatschbach 25322 (Ld), 27058 (Ld, N).

VERBENA EHRENBERGIANA Schau., *Linnaea* 20: 477. 1847.

Additional bibliography: Schau., *Linnaea* 20: 477. 1847; Kearney, *List Citations Place Publ. Spp. Ariz. Fl.* 112 [thesis]. 1951; Moldenke, *Phytologia* 23: 225 & 293 (1972) and 24: 250. 1972.

It is worthy of note that this binomial was first validly published by Schauer in the volume of *Linnaea* cited above, part 4 (pp. 385—512) of which was published in August of 1847, while DeCandolle's "Prodromus", volume 11, to which the binomial is usually credited (even by the original "Index Kewensis"), was not published until November 26 of that year.

Recent collectors have found the plant growing on steep wet slopes in Quercus-Liquidambar woods. The corollas are said to have been "white" on H. E. Moore 3962. Kelly reports the vernacular name "alfombrilla cimarrona" and states that the plant is used medicinally by the Totonac Amerinds "para dolor del estomago".

Additional citations: MEXICO: Hidalgo: H. E. Moore 3962 (Ba). Veracruz: I. Kelly 182 (Ba), 310 (Ba).

VERBENA ELEGANS H.B.K.

Additional synonymy: Glandularia elegans (L.) Small ex Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 82. 1968.

Additional bibliography: Paxt., *Pock. Bot. Dict.*, ed. 1, 328. 1840; Schau., *Linnaea* 20: 478. 1847; Paxt., *Pock. Bot. Dict.*, ed. 2, 328. 1849; Fedde & Schust. in *Just, Bot. Jahresber.* 60 (2): 575. 1941; Solbrig in Heywood, *Mod. Meth. Pl. Tax.* 82 & 87—89. 1968; Moldenke, *Phytologia* 23: 220, 225—229, 286, 414, 426, & 431 (1972), 24: 36, 37, 47, 48, 148, & 254 (1972), 25: 234 (1973), and 28: 113. 1974.

Recent collectors have found this plant growing in conifer woods, on roadside bankings, in the shade of oaks near streams, and in open meadows in fir woods, describing the stems as erect from rooting nodes, flowering in June (in addition to the months previously reported by me in this series of notes). The corollas are said to have been "bright-rose" in color on H. E. Moore 3123 and "reddish-purple" on H. E. Moore 3555. Paxton (1840) reports that the species was introduced into cultivation in England in 1840. The Hidalgo & Anda s.n. [25/VI/1967], cited below, is a mixture with V. canescens H.B.K.

Solbrig (1968) reports the pollen fertility of this species is

97 percent.

The H. E. Moore 1304, distributed as typical V. elegans, is actually V. elegans var. asperata Perry.

Additional citations: ARIZONA: Pima Co.: Gould & Haskell 3253a (B1--58404). MEXICO: Hidalgo: Anduaga A. 3 (Mi, Ws); Díaz B. s.n. [28.VIII.1966] (Ws); Hidalgo & Anda s.n. [25/VI/1967] (Ba, Ws); H. E. Moore 3123 (Ba), 3555 (Ba).

VERBENA ELEGANS H.B.K. x V. PERUVIANA (L.) Britton

Additional synonymy: "Glandularia elegans x G. peruviana" Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968.

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 87 & 88. 1968; Moldenke, Phytologia 23: 227, 426, & 431 (1972) and 24: 37--38. 1972.

Solbrig (1968) reports that the pollen fertility in this hybrid is only 9 percent!

VERBENA ELEGANS H.B.K. x V. PULCHELLA Sweet

Additional synonymy: "Glandularia elegans x G. pulchella" Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968.

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 87 & 88. 1968; Moldenke, Phytologia 23: 227 & 431 (1972) and 24: 47--48. 1972.

Solbrig (1968) reports the pollen fertility of this hybrid as only 24 percent.

VERBENA ELEGANS H.B.K. x V. STELIARIOIDES Cham.

Additional synonymy: "Glandularia elegans (L.) Small x G. stellaroides (Cham.) Schnack & Covas" ex Solbrig in Heywood, Mod. Meth. Pl. Tax. 82. 1968.

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 82. 1968; Moldenke, Phytologia 23: 227--228 & 431. 1972.

VERBENA ELEGANS var. ASPERATA Perry

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 575. 1941; Moldenke, Phytologia 23: 226, 228--229, 286, & 414 (1972) and 24: 254. 1972.

Recent collectors describe this plant as an upright or rambling herb, 1 1/2 feet tall, the inflorescence elongating in fruit, and found it growing on the rocky walls and floor of a barranca and on "ladera pizarrosa con vegetación encinar". They record the additional vernacular name "alfombria". The corollas are said to have been "blue" on MacDougall H.519, "reddish-purple" on Lundell & Lundell 12392, "red-purple" on H. E. Moore 1304, "opening red RHS 52/A with darker eye, fading to pink RHS 55/C with darker eye" on Huttleston 2267, and "corolla-lobes opening purple-lavender RHS Fa 2 Red-Purple 67/B, fading lighter" on J. W. Peterson J.2007.

D. G. Huttleston, in a letter to me dated November 2, 1973, says that this plant, which he took to be xV. teasii Moldenke, "is a very

showy ornamental up until a severe freeze and is hardy [in Pennsylvania] when winters are mild. Its fruiting racemes never get to be much more than 3 inches long, but in other characteristics it seems to fit [xV. teasii]." Seeds were obtained from Conard-Pyle Company.

Additional citations: MEXICO: Hidalgo: Lundell & Lundell 12392 (M); H. E. Moore 1304 (Ba). Oaxaca: MacDougall H.519 (N). Querétaro: J. Rzedowski 27859 (M). CULTIVATED: Mexico: Philbrick 802 (Ba). Pennsylvania: Huttleston 2267 [Longw. Gard. 69514] (Ba); J. W. Peterson J.2007 (Ld).

xVERBENA ENGELMANNII Moldenke

Additional bibliography: Rydb., Fl. Prairies & Plains, pr. 1, 677. 1932; Fell, Fl. Winnebago Co. 123. 1955; Rydb., Fl. Prairies & Plains, pr. 2, 2: 677. 1971; Wherry, Bartonica 41: 79. 1971; Moldenke, Phytologia 23: 229--230, 265, & 436 (1972) and 24: 250. 1972.

Wherry (1971) records this hybrid from Montgomery County, Pennsylvania. The Hotchkiss 1561, cited below, is in beginning anthesis, but exhibits rather few flowers per spike and these rather widely separated, the spikes rather weak and very slender. It seems most probable to me, therefore, that it represents this hybrid.

Additional citations: DISTRICT OF COLUMBIA: Hotchkiss 1561 (W-1769203).

VERBENA EPHEDROIDES Cham.

Emended synonymy: Verbena sphenoides Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: xix, sphalm. 1971.

Additional & emended bibliography: Gibert, Enum. Pl. Montevid. 43. 1873; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839 & xix, map 1392. 1971; Moldenke, Phytologia 23: 260 & 437. 1972; A. L. Moldenke, Phytologia 23: 318. 1972.

Hatschbach refers to this plant as a shrub, 1.5 m. tall, and found it growing in "brejo", flowering and fruiting in April. The corollas are said to have been "lilac" in color on Hatschbach 24137 while fresh.

Additional citations: BRAZIL: Paraná: Hatschbach 24137 (N).

xVERBENA FERAX Moldenke

Additional synonymy: "Glandularia canadensis x G. racemosa" Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968.

Additional bibliography: Solbrig in Heywood, Mod. Meth. Pl. Tax. 88. 1968; Moldenke, Phytologia 23: 231. 1972.

VERBENA FILICAULIS Schau.

Additional & emended bibliography: Braga, Fl. Nordest., ed. 2, 476. 1960; Reitz, Sellowia 22: 145. 1970; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839 & xix, map 1392. 1971; Moldenke, Phytologia 23: 260. 1972.

Recent collectors refer to this plant as "erect", "decumbent", or "procumbent", and have found it growing in "brejo". Hatschbach encountered it "do campo limpo levemente úmido", flowering in March. The corollas are described as having been "violet" in color on Hatschbach 26549, Hatschbach, Smith, & Klein 28264, and "lilac" on Hatschbach 26225.

Additional citations: BRAZIL: Paraná: Hatschbach 20082 (Ba), 26225 (Ld), 26549 (Ld); Hatschbach, Smith, & Klein 28264 (Ld, Ld).

VERBENA GLABRATA H.B.K.

Additional bibliography: Moldenke, *Phytologia* 23: 222, 232—233, & 293 (1972) and 24: 30. 1972.

Soejarto describes this plant as a "small shrub; fragrant smell; used as remedy for colds" in Colombia. Recent collectors have encountered it in wet meadows, while Fosberg reports it "common in grassy places on top of low hills grazed by goats". My wife and I found it growing abundantly on grassy roadsides and along fencerows in Ecuador. The flowers are described on F. R. Fosberg 27646 as having the "corollas pale-lavender, calyces maroon". Material has been misidentified and distributed in some herbaria under the designation Lippia nodiflora L.

Additional citations: COLOMBIA: Nariffo: Soejarto 1010 (Oa). EC-UADOR: Chimborazo: F. R. Fosberg 27646 (W—2638259). Cotopaxi: Holm-Nielsen & Jeppesen 1147 (Ld). Pichincha: Asplund 16030 (W—2652459).

VERBENA GLUTINOSA Kuntze

Additional & emended bibliography: Schnack & Covas, *Darwiniana* 7: 72, 74, & 75, pl. 2 E. 1945; Moldenke, *Phytologia* 23: 234, 419, & 426. 1972.

VERBENA GOODINGII Briq.

Additional synonymy: Verbena goodingii Briq. ex Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 747. 1934.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 747 (1934) and 59 (2): 417. 1939; Moldenke, *Phytologia* 23: 368, 374, & 436 (1972) and 24: 45. 1972; Rickett, *Wild Fls. U. S.* 6 (3): 544 & 783. 1973; Moldenke, *Phytologia* 28: 111 & 113. 1974.

Recent collectors have come upon this plant in gravelly soil pockets on rock cliff faces, in flat desert country, along permanent streams in oak-Sonoran Desert zone, and in the Upper Sonoran life-zone with pinyons and junipers in sunny rocky washes. Wolf reports it as "common" and Holmgren says "locally common on basalt rocky slope". Lehto and his associates report that the plant is grazed in Pima County, Arizona. The corollas are described as having been "lavender" on Moran 17739, "lavender-blue" on C. B. Wolf 7021, "pale-violet" on Dress 2902, "pale-lilac" on Dress 3257, and "corolla-tube pale-yellow, lobes blue" on N. H. Holmgren 3308.

The McClintock 52-148, distributed as V. gooddingii, is actually var. nepetifolia Tidestr.

Additional citations: UTAH: Washington Co.: Gould 1730 (Bl--58352). NEVADA: Clark Co.: Train 1458 (Bl--23720). NEW MEXICO: Sandoval Co.: Plowman & Kilham AP.18 (Oa). ARIZONA: Cochise Co.: Vogel s.n. [9 June 1962] (Bl--172217). Coconino Co.: Dress 2902 (Ba). Maricopa Co.: Chilton s.n. [3/25/48] (Bl--130088). Mohave Co.: Cottam 13080 (Bl--100093); Dress 3257 (Ba); C. L. Hitchcock 25614 (Bl--215646); Hollister 509 (Bl--57766); N. H. Holmgren 3308 (W--2648317). Pima Co.: Lehto, Brown, Nash, & Pinkava 10646 (N). CALIFORNIA: San Bernardino Co.: C. B. Wolf 7021 (Ba). MEXICO: Baja California: Moran 17739 (Ld).

VERBENA GOODDINGII var. NEPETIFOLIA Tidestr.

Additional synonymy: Verbena gooddingii var. nepetifolia Tidestr. ex Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 747. 1934.

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 54 (2): 747 (1934) and 59 (2): 417. 1939; Kearney, List Citations Place Publ. Spp. Ariz. Fl. 112 [typescr.]. 1951; Moldenke, Phytologia 23: 235--237 & 436 (1972) and 28: 111. 1974.

Recent collectors describe this plant as a repent herb, with slightly fragrant flowers. "occasional along arroyos" or "locally common in disturbed areas". Denham refers to it as "common and widespread in semi-desert" parts of Arizona. The corollas are said to have been "rose" colored on Moran 7893 or "corolla-lobes between RHS Mineral Violet 635/2 and 635/2, proximally greenish-white".

Material of this variety has been misidentified and distributed in some herbaria as V. ambrosifolia f. eglandulosa Perry.

Additional citations: ARIZONA: Cochise Co.: Denham 2055 (Bl--244703). Pima Co.: C. L. Hitchcock 25540 (Bl--215694). Yuma Co.: McClintock 52-148 (Bl--22614). MEXICO: Baja California: Bell & Newcomb 1356 (Bl--73739); Moran 7893 (Ba, Bl--200798); Moran, Witham, & Hommersand 16541 (Ba, Bl--240186). CULTIVATED: Pennsylvania: Peele 1041 [Longw. Gard. 63221] (Ba).

VERBENA GRACILESCENS (Cham.) Herter

Emended synonymy: Verbena offinalis var. gracilescens Cham. ex Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839, sphalm. 1971.

Additional & emended bibliography: Gibert, Enum. Pl. Montevid. 43. 1873; R. C. Foster, Contrib. Gray Herb. 184: 170. 1958; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839. 1971; Moldenke, Phytologia 24: 217 (1972) and 25: 244. 1973.

The corollas are described as having been "blue" on Ruíz Huidobro 3182 & 3216 and on Rosengurt Gallinal 5803.

Additional citations: BOLIVIA: Santa Cruz: Peredo 423 (N). URUGUAY: Rosengurt Gallinal 5803 (Ba). ARGENTINA: Santa Fé: Ruíz Huidobro 3182 (Bl--104421), 3216 (Bl). Tucumán: Herrera 321 (N).

VERBENA GRACILIS Desf.

Additional bibliography: Kearney, List Citations Place Publ. Spp. Ariz. Fl. 112 [typescr.]. 1951; Sanchez Sanchez, Fl. Val. Mex., ed. 1, 328, fig. 263-A. 1969; Moldenke, Phytologia 23: 238--239, 242, & 374. 1972.

Additional illustrations: Sanchez Sanchez, Fl. Val. Mex., ed. 1, fig. 263-A. 1969.

Detling encountered this plant growing in a woodland of Pinus cembroides and Quercus toumeyii on a rolling plateau in Durango. Sanchez Sanchez found it (1969) in the pedregal of the Valley of Mexico, blooming there in July.

The Roe & Roe 2418, distributed as V. gracilis, is actually V. canescens H.B.K., while H. E. Moore 1625 is V. menthaefolia Benth. The Lemmon 2858, cited below, is probably an isotype of V. arizonica A. Gray. The label on the specimen reads "Tanner's Cañon, Huachuca Mts. July 1882. J. G. Lemmon 2858". The original description by Gray (1883) gives the locality of collection as "S. Arizona, in cañons near Fort Huachuca, Lemmon", with no collector's number nor date of collection indicated.

Additional citations: ARIZONA: Cochise Co.: Lemmon 2858 (Tu--163803). MEXICO: Durango: Detling 8411 (W--2669337).

VERBENA GUARANITICA (Troncoso) Moldenke

Additional bibliography: "S. K. J.", Biol. Abstr. 54: 2319. 1972; Anon., Biol. Abstr. 54 (4): B.A.S.I.C. S.276 (1972) and 54 (5): B.A.S.I.C. S.106 & S.272. 1972; Moldenke, Biol. Abstr. 54: 1725. 1972; Cabrera, Bol. Soc. Argent. Bot. 14: 258. 1972; Moldenke, Phytologia 23: 239--240, 301, 418, & 419 (1972) and 25: 240. 1973.

VERBENA HALEI Small

Additional bibliography: Kearney, List Citations Place Publ. Spp. Ariz. Fl. 112 [typescr.]. 1951; Mahler, Keys Vasc. Pl. Black Gap, ed. 3, 70. 1971; Hyland, U. S. Dept. Agr. Pl. Invent. 178: 28 & 284. 1972; Moldenke, Phytologia 23: 219, 237, 240--244, & 302 (1972) and 24: 224 & 257. 1972; Rickett, Wild Fls. U. S. 6 (3): 544 & 783. 1973.

Recent collectors have encountered this plant in fields and along roadsides, in moist bottomland pastures, in oak-pine associations, and "on rocky hills with thin gravelly soil and oak-pine grassland". The corollas are described as "lavender" on Lundell & Lundell 10847 & 12107, "purple" on C. L. Lundell 10689, and "lavender-purple" on H. E. Moore 529.

Hyland (1972) reports this plant in cultivation, probably at Beltsville, Maryland, from seeds collected by Robert MacEwan in Bexar County, Texas.

Additional citations: SOUTH CAROLINA: Aiken Co.: Ellison & Ellison 1010 (Bl--251005). GEORGIA: Dougherty Co.: Moldenke & Moldenke 26908 (Ac, Ba, Ld). FLORIDA: Leon Co.: Godfrey 56533a (Ba). Walton Co.: Moldenke & Moldenke 26734 (Ac, Ba, Ld, Ws). MISSISS-

IPPI: Harrison Co.: Richmond s.n. [Apr. 30, 1964] (Ba). LOUISIANA: Union Par.: Thomas & al. 13501 (Bl—244367). TEXAS: Bexar Co.: J. O. Perez 21 (Bl—209654). Cameron Co.: C. L. Lundell 10689 (Mi). Dallas Co.: Lundell & Lundell 12107 (Mi). Dimmit Co.: Ramirez & Cardenas 3 (Bl—209442). Frio Co.: Ramirez & Cardenas 25 (Bl—210679). Galveston Co.: Lindheimer 155 (Bl—262806). Gonzales Co.: L. H. Bailey 756 (Ba). Harris Co.: L. C. Higgins 3925 (Mi). Kenedy Co.: Lundell & Lundell 10847 (Mi). Lavaca Co.: Strother 185 (Bl—197849). Rusk Co.: C. E. Porter 51-1830 (Bl—81769). San Patricio Co.: Holden s.n. [Aransas City, 10 May 1890] (Mi). Smith Co.: H. E. Moore 529 (Ba). Webb Co.: Novoa & Cantu 10 (Bl—210116). MEXICO: Chihuahua: Pringle s.n. [Ortiz, Apr. 11, 1887] (Bl—149327). Tamaulipas: Dominguez M. & McCart 8183 (Bl—197825); Reséndez 9 (Bl—197872). Veracruz: Gutiérrez R. 218 (Ws). Zacatecas: Taylor & Taylor 6230 (N).

VERBENA HALEI f. ROSEIFLORA (Benke) Moldenke

Additional bibliography: Fedde & Schust. in Just, Bot. Jahrbuch. 60 (2): 575. 1941; Moldenke, Phytologia 23: 244. 1972.

Recent collectors have found this plant growing on roadbanks. The corollas are described as having been "pink" on Dress & Hansen 914.

Additional citations: GEORGIA: Charlton Co.: Dress & Hansen 914 (Ba).

VERBENA HASSLERANA Briq.

Additional bibliography: Stafleu, Internat. Code Bot. Nom. 425. 1972; Moldenke, Phytologia 23: 244 (1972) and 25: 368. 1973; Anon., Biol. Abstr. 56 (2): B.A.S.I.C. S.280. 1973; Moldenke, Biol. Abstr. 56: 653. 1973.

VERBENA HASSLERANA var. GIANDULOSA Moldenke, Phytologia 25: 368. 1973.

Bibliography: Moldenke, Phytologia 25: 368 (1973) and 26: 363. 1973; Anon., Biol. Abstr. 56 (2): B.A.S.I.C. S.280. 1973; Moldenke, Biol. Abstr. 56: 653. 1973.

Citations: BRAZIL: Mato Grosso: Hatschbach 29600 (Z-type).

VERBENA HASTATA L.

Additional synonymy: Verbena urticae fol. angustiore flore coerulea. Herm. ex Rivin., Introd. Gen. Rem Herb. Ord. Pl. Irreg. Monop. [24]. 1690. Verbena hastata (floribus violaceis Willd., Enum. Pl. Hort. Berol. 2: 633. 1809.

Additional & emended bibliography: Rivin., Introd. Gen. Rem Herb. Ord. Pl. Irreg. Monop. [24], pl. [57]. 1690; Raesch., Nom. Bot., ed. 3, 3. 1797; Desf., Tabl. Écol. Bot., ed. 1, 55. 1804; Willd., Enum. Pl. Hort. Berol. 2: 633. 1809; Desf., Tabl. Écol. Bot., ed. 2, 66. 1815; S. Ell., Sketch, pr. 1 & 2, 2: 97—98 (1821) and 2: 743. 1824; Bigel., Florul. Boston., ed. 1, 238—239. 1824; J. Torr., Compend. Fl. 238. 1826; Mohl., Ann. Sci. Nat., ser.

2, 3: 319. 1835; Bigel., *Florul. Boston.*, ed. 3, 254. 1840; Paxt., *Pock. Bot. Dict.*, ed. 1, 328. 1840; J. Torr., *Fl. N. Y.* 2: 51—52. 1843; Paxt., *Pock. Bot. Dict.*, ed. 2, 328. 1849; O. R. Willis, *Fl. Westchester Co.* 801. 1880; J. L. Bennett, *Pl. Rhode Isl.* 30. 1888; K. Brandeg., *Zoe* 4: 216. 1893; J. Jacks., *Fl. Worcester Co.*, ed. 2, 40. 1894; W. Stone, *Rep. N. J. State Mus.* 1910 (2): 660 & 661. 1911; W. C. Ferguson, *Torreya* 25: 113. 1925; Wangerin in Just, *Bot. Jahresber.* 53 (2): 644. 1925; Blewitt, *Fl. Waterbury* 105. 1926; Clute, *Am. Botanist* 33: 112. 1927; Tischler, *Tabul. Biol.* 4: 43. 1927; Grieve, *Modern Herb.*, pr. 1, 2: 832. 1931; Benner, *Fl. Bucks Co.* 255. 1932; Rydb., *Fl. Prairies & Plains*, pr. 1, 677—678 & 967, fig. 479. 1932; Wangerin in Just, *Bot. Jahresber.* 56 (1): 668. 1935; Oertel, *U. S. Dept. Agr. Circ.* 554: 35. 1939; Martin, Zim, & Nels., *Am. Wildlife & Pl.*, pr. 1, 444. 1951; W. A. Weber, *Handb. Pl. Colo. Front Range*, ed. 1, 156—157. 1953; L. Bradley, *Ferns & Flow. Pl. Audub. Center* 67 & 100. 1955; Fell, *Fl. Winnebago Co.* 122. 1955; C. E. Phillips, *Weeds Northeast* 32 & 80. 1956; Martin, Zim, & Nels., *Am. Wildlife & Pl.*, pr. 2, 444. 1961; W. A. Weber, *Handb. Pl. Colo. Front Range*, ed. 2, 156—157. 1961; Nair & Rehman, *Bull. Nat. Bot. Gard. Lucknow* 76: 3—5, text fig. 5. 1962; Grieve, *Modern Herb.*, pr. 2, 2: 832. 1967; W. A. Weber, *Rocky Mtn. Fl.*, ed. 1, 306. 1967; Betz & Cole, *Trans. Ill. Acad. Sci.* 62: 48. 1969; Stuckey & Wentz, *Ohio Journ. Sci.* 69: 237. 1969; Delorit, *Illustr. Tax. Man. Weed Seeds* 96 & 97. 1970; [Morris Co. Park Comm.] Anon., *Fl. & Fauna Great Swamp*, ed. 1, 12. 1971; Eilers, *Univ. Iowa Stud. Nat. Hist.* 21: 60 & 123. 1971; S. Ell., *Sketch*, pr. 3, 2: 97—98 & 743. 1971; Ellis, Wofford, & Chester, *Castanea* 36: 242. 1971; Rydb., *Fl. Prairies & Plains*, pr. 2, 2: 677—678 & 967, fig. 479. 1971; Sipple, *Bartonia* 41: 27. 1971; Wherry, *Bartonia* 41: 79. 1971; Chusey, *Ohio Journ. Sci.* 72: 43. 1972; D. S. & H. B. Correll, *Aquat. & Wetland Pl. SW. U. S.* 1396, [1398], & 1399, fig. 654. 1972; Crum, *Proc. Iowa Acad. Sci.* 78: 86. 1972; Farnsworth, *Pharmacog. Titles* 7 (8): xxvii & item 16419. 1972; Moldenke, *Biol. Abstr.* 54: 1729. 1972; Nettleton & al., *Detect. Potent. Antitumor Agents (mss.)* 1972; W. A. Weber, *Rocky Mtn. Fl.*, ed. 2, 306. 1972; Wilkinson & Jaques, *How Know Weeds*, ed. 2, 124, 207, 219, 222, 228, & 231, fig. 299 & 300. 1972; Moldenke, *Phytologia* 24: 21—22, 51, 135, 224, 230, 247, & 249 (1972) and 25: 225 & 227. 1973; Cody, *Ind. Sem.* 1973: 26. 1973; Farnsworth, *Pharmacog. Titles* 6, *Cum. Gen. Ind.* [121] (1973) and 8 (6): x & 479. 1973; Lommasson, *Nebr. Wild Fls.* 86 & 184. 1973; A. L. Moldenke, *Phytologia* 25: 167. 1973; Ralph, *Checklist Vasc. Pl. Plant Comm.* 29. 1973; Rickett, *Wild Fls. U. S.* 6 (3): 544, [545], & 783, pl. 196. 1973; Rimpler & Schafer, *Tetrahed. Let.* 17: 1463—1464. 1973; W. Stone, *Pl. South. N. J.*, pr. 2, 660. 1973.

Additional & emended illustrations: Rivin., *Introd. Gen. Rem Herb. Ord. Pl. Irreg. Monop. pl.* [57]. 1690; Rydb., *Fl. Prairies & Plains*, pr. 1, 678, fig. 479. 1932; Martin, Zim, & Nels., *Am. Wildlife & Pl.*, pr. 1, 444 (1951) and pr. 2, 444. 1961; Delorit, *Illustr. Tax. Man. Weed Seeds* 97 (in color). 1970; Rydb., *Fl. Prairies & Plains*, pr. 2, 2: 678, fig. 479. 1971; Wilkinson &

Jaques, How Know Weeds, ed. 2, 124, fig. 299. 1972; D. S. & H. B. Correll, Aquat. & Wetland Pl. SW. U. S. [1398], fig. 654. 1972; Rickett, Wild Fls. U. S. 6 (3): [545], pl. 196 (in color). 1973.

The Corrells (1972) comment that "In dry fields and pastures a field-form is developed with the leaves more canescent-puberulous beneath and slightly rough above, the stem many-branched, and the terminal inflorescences in many groups, all more or less equally dense". My son, my wife, and I have observed this curious form many times in dry pastures in the mid-western states. It seems to me to be worthy of nomenclatural recognition, but this has as yet not been done.

Crum (1972) records V. hastata from Black Hawk County, Iowa, where he notes that it inhabits marsh edges and moist prairies, is frequent, and flowers in July. Ellis, Wofford, & Chester (1971) record it from Trigg County, Kentucky. Wherry (1971) found it in Montgomery County, Pennsylvania. Wilkinson & Jaques (1972) describe the species as "Common in moist places", flowering from June to September. Bradley (1955) records it as "fairly common in open swamps" in Fairfield County, Connecticut. Benner (1932) reports it as frequent in low ground, especially in waste places, and cites from Bucks County, Pennsylvania, a collection by Ruth from Monroe, by Long from Rich Hill, Morrisville, Emilie, and Grenoble, by Fretz from Pleasant Point, by Meredith from Doylestown, and by MacElwee from Tullytown.

Torrey (1843) gives its habitat in New York state as "Wet meadows and margins of creeks", blooming from July to September. In the experience of my son, my wife, and myself in observing this species for many years in the northeastern and middle Atlantic states, this is an accurate description of its normal habitat in this portion of its range. Eilers (1971) records it as common in marshes, on moist prairies, and in open alluvial woods in Benton, Black Hawk, Bremer, Buchanan, Butler, Cerro Gordo, Chickasaw, Delaware, Floyd, Grundy, Hardin, Johnson, Linn, and Winneshiek Counties, Iowa. Raeschel (1797) gives its native home as "Canada". Sone (1911) describes it as "One of the components of the typical late summer flora of the damp meadows and swamps of the Middle district [of New Jersey] along with Eupatorium maculatum, E. perfoliatum, Asclepias pulchra, Vernonia noveboracensis, etc." He also notes that it inhabits "Open moist ground" and is "common throughout the State, except in the Pine Barrens, where it is absent", flowering from "Late June to early September". Paxton (1840) tells us that it was introduced into cultivation in England in 1810, but is "worthless" horticulturally.

Fell (1955) says that in Winnebago County, Illinois, V. hastata is "Common on roadsides and in open woods and pastures but usually in damp soil. X rydbergii Moldenke, a hybrid with V. stricta is common and variable." Blewitt (1926) records V. hastata as frequent at Waterbury, Connecticut, in "Fields, roadsides and waste places, in moist and dry soil", flowering there in July and August. Willis (1880) reports it from "Waste places about dwellings" in Westchester County, New York. Oertel (1939) states that it is a

honey and pollen plant in Texas, while Martin and his associates (1951) assert that its seeds are eaten by such birds as the stilt sandpiper, lark bunting, cardinal, junco, and field, song, swamp, tree, and white-crowned sparrows and the entire plant is eaten by cottontail rabbits.

Stuckey & Wentz (1969) report that V. hastata is an infrequent species upstream from Lima, Ohio, inhabiting river bottoms. Pollution of the river has caused it to be completely absent now downstream from that city. The same is now true of Eleocharis obtusa, Eupatorium perfoliatum, Juncus torreyi, Scirpus atrovirens, Sium suave, and Sparganium eurycarpum. These same species are widespread and generally common in roadsides and drainage ditches where the city pollution into the river has not reached them.

It should be noted that the "Verbena pinnatifida Lam." of Nair & Rehman (1962) is most probably a misidentification of V. tenuisecta Briq. The O. E. White s.n. [27 Aug. 1946], distributed as V. hastata, is actually var. scabra Moldenke.

Recent collectors have found V. hastata growing in meadows, open pond banks, and wet soil in general. The corollas on Moldenke & Moldenke 9886 are described as having been "blue", but since I am more or less colorblind to reds, it is probable that they were actually the normal purple of the typical form of this species.

Delorit (1970) describes the seeds of V. hastata as follows: "Oblong in outline; about the same width throughout. Dorsal side convex, its margins winged downward; ventral side granular, two-faced forming a longitudinal ridge where they join. Both ends of the seed usually bluntly rounded. Dorsal side usually with three to five weak but rather broad-based longitudinal ribs with a few weak transverse ribs which frequently occur only between the margins and the first adjacent longitudinal rib. Transverse ribs usually occur only in the upper one-fourth to one-third of the seed. Seed scar oval, oblique, white. Dark reddish-brown to almost black, 1.7--2.0 mm long, 0.7--0.9 mm wide."

Rimpler & Schafer (1973) have isolated the chemical "hastatocid" from this species and V. officinalis L.

The corollas on E. C. Leonard 20629 are described as having been "purple", the usual color for the typical form of this species, in spite of the fact that the most commonly used English vernacular name for it is "blue vervain", perhaps indicating a wider prevalence of red-colorblindness in the general populace than is usually assumed.

The H. G. Smith s.n. [Berkeley, Colo.], cited by me in a previous installment of these notes as typical V. hastata, seems better placed as var. scabra Moldenke, as are also the Ramaley 12393 & 12890 distributed in some herbaria as typical V. hastata. Hotchkiss 1561 is probably xV. engelmannii Moldenke, Horr 4691 is xV. rydbergii Moldenke, and Field Mus. Econ. Pl. 5669 is not verbena-ceous.

Additional citations: QUEBEC: Sherbrooke Co.: Poulin & Legault

8507 (Bl—210631). Wolfe Co.: Blais, Hamel, & Legault 11498 (Bl—222085); Hamel 13050 (Bl—223418). VERMONT: Windham Co.: Moldenke & Moldenke 9886 (Ba). NEW YORK: Ontario Co.: A. H. Graves s.n. [Aug. 29, 1923] (Ba), s.n. [Aug. 22, 1924] (Ba). Queens Co.: Wendolowski s.n. [July 22, 1896] (Ba). Schuyler Co.: McCarty s.n. [Watkins, Aug. 1887] (Ba). NEW JERSEY: Middlesex Co.: Kelsey 173 (Ba). MARYLAND: Garrett Co.: E. L. Braun s.n. [VII-25-06] (W—2712375). Harford Co.: Shull 156 (W—640955). Prince Georges Co.: Knowlton s.n. [July 25, 1897] (W—336825); E. C. Leonard 19422 (W—1895457, W—1895458), 20629 (W—2162717, W—2162718). Plummer's Island: Killip 31909 (W—2761259). DISTRICT OF COLUMBIA: Collector undesignated s.n. [First Locks in Potomac] (W—221211); Eseltine 157 (W—642215); E. C. Leonard 466 (W—2163036); Seaman s.n. (W—787355); Steele s.n. [July 16, 1896] (W—364285, W—364286); Tidestrom 8294 (W—1769327); Ward s.n. [Aug. 12, 1877] (W—147576), s.n. [1878] (W—2761249, W—2761250), s.n. (W—155633). VIRGINIA: Fairfax Co.: W. Palmer s.n. [Aug. 10, 1901] (W—1438795). Fauquier Co.: Allard 5349 (W—1787552). OHIO: Hamilton Co.: E. L. Braun s.n. [IX-3-03] (W—2712376). Lorain Co.: Dick s.n. [August 9, 1894] (Mi). INDIANA: Lake Co.: Shimek s.n. [Sept. 1, 1920] (Bl—105243). Madison Co.: McCoy 2237 (Bl—131299). KENTUCKY: Boone Co.: E. L. Braun 3314 (W—2667625). MINNESOTA: Mahanomen Co.: R. G. Baker s.n. [June, July 1964] (Bl—214584). COLORADO: Weld Co.: Arp 1351 (Bl—250952). NEBRASKA: Cherry Co.: G. N. Jones 35870 (Bl—191350). OKLAHOMA: Muskogee Co.: Wallis 7728 (Ba). LOCALITY OF COLLECTION UNDETERMINED: Burke s.n. [Snake country] (Pd); Field Mus. Econ. Pl. 271190 (Oa).

VERBENA HASTATA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 23: 266. 1972.

Lawrence & Dress describe this as a perennial plant, 1 m. tall, with white flowers, growing in marshy ground, flowering and fruiting in August.

Additional citations: NEW JERSEY: Ocean Co.: Lawrence & Dress 570 (Ba).

VERBENA HASTATA f. CAERULEA Moldenke

Additional bibliography: Moldenke, Phytologia 23: 266—267. 1972.

The corollas on E. C. Leonard 19915 are described as having been "bright-blue" when fresh.

Additional citations: MARYLAND: Prince Georges Co.: E. C. Leonard 19915 (W—1873203).

VERBENA HASTATA f. ROSEA Cheney

Additional synonymy: Verbena hastata β floribus rubris Willd., Enum. Pl. Hort. Berol. 2: 633. 1809.

Additional bibliography: Willd., Enum. Pl. Hort. Berol. 2: 633. 1809; Moldenke, Phytologia 23: 267 & 414. 1972.

VERBENA HASTATA var. SCABRA Moldenke

Additional bibliography: K. Brandeg., Zoe 4: 216. 1893; D. S. & H. B. Correll, Aquat. & Wetland Pl. SW. U. S. 1396 & 1399. 1972; Moldenke, Phytologia 23: 262, 264, 265, & 267—268. 1972; A. L. Moldenke, Phytologia 25: 167. 1973.

Recent collectors have found this plant growing in low meadows and in sandy soil of Yucca-Artemisia-Rhus communities. Brandege refers to it as "very abundant, 5—8 feet tall" on Bouldin Island, California. It has been collected in flower and fruit in August and at altitudes up to 4500 feet. The Corrells (1972) assert that it "differs in its more rigid leaves that are conspicuously scabrous above and often more or less conspicuously pubescent beneath". They state that it is known from Hemphill County, Texas, and give its overall distribution as "a western form of the species, B.C., Ida., Mont. and N.D. to Calif., N. M. and Tex., e. to Wisc. and Kan."

The Over 7079, Ramaley 12393 & 12890, and H. G. Smith s.n., cited below, were previously reported by me as typical V. hastata in this series of notes before the variety was recognized nomenclaturally.

Additional citations: SOUTH DAKOTA: Washabaugh Co.: Over 7079 (Bl—42326). UTAH: Salt Lake Co.: F. E. Leonard s.n. [July 17, 1884] (Mi). COLORADO: Boulder Co.: W. A. Weber 13388 (Bl—218522). Denver Co.: H. G. Smith s.n. [Berkeley, Aug. 2, 1901] (Bl—42312). Las Animas Co.: C. M. Rogers 4981 (Bl—55579). Weld Co.: Ramaley 12393 (Bl—42316), 12890 (Bl—42315). NEBRASKA: Holt Co.: O. E. White s.n. [27 Aug. 1946] (W—2646207). TEXAS: Potter Co.: L. C. Higgins 4842 (Mi). WASHINGTON: Yakima Co.: Kruckeberg 2545 (Bl—79935).

VERBENA HATSCHBACHI Moldenke

Additional bibliography: Moldenke, Phytologia 23: 268. 1972.

The corollas on Hatschbach 24707 are described as having been "violet" in color when fresh. This collector refers to the plant as procumbent and found it flowering in September.

Additional citations: BRAZIL: Paraná: Hatschbach 24707 (N).

VERBENA HAYEKII Moldenke

Additional bibliography: Moldenke, Phytologia 23: 268 & 270. 1972.

This plant has been collected in flower in October (in addition to the months previously recorded by me in these notes). Material has been misidentified and distributed in some herbaria under the name V. littoralis H.B.K.

Additional citations: PERU: Cuzco: E. L. Johnson 6310 (Bl—55080).

VERBENA HIRTA Spreng.

Additional & emended bibliography: Reitz, Sellowia 22: 145. 1970; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 839, map

1392. 1971; Moldenke, *Phytologia* 23: 268—269. 1972; A. L. Moldenke, *Phytologia* 23: 318. 1972.

The Angely (1971) work cited in the bibliography above was previously cited as "1970", the title-page date, but was actually not issued until 1971.

The Eitens describe this plant as a low shrub and found it growing at altitudes of 2300—2450 meters on open sedge-grass slopes and "On planalto of steep hilly terrain, many hills topped with mountainous outcrops of bare sienite quartz, the hillsides with frequent rounded outcropping quartz rocks and boulders and a thin black almost pure humus soil supporting a periodically-burned natural tussock sedge-grassland with scattered low Chusquea bamboo and occasionally other shrubs, the lower valley sides often with dense Chusquea brakes or brooks lined with a marsh of Cladium in tussocks or with 'trunks' of massed rhizomes." Hatschbach reports that the plant grows to 35 cm. tall and found it growing on campos and on "campo seco limpo".

The corollas are described as having been "lilac" in color on Hatschbach 25608, 25843, & 26440, "violet" on Hatschbach, Smith, & Klein 28312 and Krapovickas, Cristóbal, & Maruñak 23375, "purple" on Eiten & Eiten 6660, and "light-violet with a violet center" on Eiten & Eiten 6611.

Additional citations: BRAZIL: Paraná: Hatschbach 25608 (N), 25843 (Ld), 26440 (Ac). Rio de Janeiro: Eiten & Eiten 6611 (W—2687599), 6660 (W—2687722). Santa Catarina: Hatschbach, Smith, & Klein 28312 (Ld). ARGENTINA: Misiones: Krapovickas, Cristóbal, & Maruñak 23375 (Ld).

VERBENA HIRTA var. GRACILIS Dusén

Additional bibliography: Moldenke, *Phytologia* 23: 269. 1972.

The corollas on Hatschbach & Guimarães 25403 are said to have been "lilac" in color when fresh and these collectors describe the plant as a subshrub, 40 cm. tall, growing in a dry campo.

Additional citations: BRAZIL: Paraná: Hatschbach & Guimarães 25403 (N).

VERBENA HISPIDA Ruiz & Pav.

Additional & emended bibliography: Part., *Pock. Bot. Dict.*, ed. 1, 328 (1840) and ed. 2, 328. 1849; Anon., *Kew Bull. Misc. Inf.* 1929, App. 3: 108. 1929; R. C. Foster, *Contrib. Gray Herb.* 184: 170. 1958; Angely, *Fl. Anal. & Fitogeogr. S. Paulo*, ed. 1, 4: 839. 1971; Beadle, Evans, Carolin, & Tindale, *Fl. Sydney Reg.*, ed. 2, 507. 1972; Moldenke, *Phytologia* 23: 269—270 & 291. 1972; A. L. Moldenke, *Phytologia* 23: 318. 1972.

According to Paxton (1840) this species was introduced into cultivation in England in 1816; the form known as V. glandulosa in 1832. Beadle and his associates (1972) state that the species is "Rare" in the Sydney, Australia, region, "Introd. from S. Amer.", and the plants always "under 1 m high", with "Glandular hairs present on inflorescence". The corollas are said to have been "pale-

mauve" on Alston 1603.

Material of V. hispida has been misidentified and distributed in some herbaria as V. officinalis L. and V. rigida Spreng.

Additional citations: SOUTH AFRICA: Cape Province: Lake 2999 (Ba). CEYLON: Alston 1603 (Pd). CULTIVATED: Ceylon: Collector undetermined s.n. [Hakegala Botanical Garden, Jan. 1888] (Pd).

VERBENA HOOKERIANA (Covas & Schnack) Moldenke

Additional bibliography: Moldenke, *Phytologia* 23: 368 & 426. 1972.

The corollas on Ruiz Leal 20012 are said to have been "rose to lilac" in color when fresh.

Additional citations: ARGENTINA: Mendoza: Ruiz Leal 20012 (Tu--162422).

VERBENA HUMIFUSA Cham.

Additional bibliography: Moldenke, *Phytologia* 24: 218. 1972.

Additional citations: BRAZIL: State undetermined: Sellow s.n. (Ba--cotype).

xVERBENA HYBRIDA Voss

Additional synonymy: "Verbena grandiflora Sessé & Moc. var. Hybr. Hort." ex Lasser, Braun, & Steyerm., *Act. Bot. Venez.* 9: 36, nom. nud. 1974. Verbena multiflora gigantea Burpee, *Burpee Seeds* 1974: 54. 1974.

Additional & emended bibliography: Dupuis, *Nouv. Fl. Usuel. & Med.* 2: 158. 1860; Tischler, *Tabul. Biol.* 4: 43. 1927; Gough, *Gard. Book Malaya* 248. 1928; Furusato, *Bot. & Zool. Theoret. & Appl.* Tokyo [Syokubutu Oyobi Dobutsu] 8: 46. 1940; Wherry, *Horticulture* 36: 279. 1958; Braga, *Pl. Nordest.*, ed. 2, 476. 1960; Graf, *Exotica* 3: 1483 & 1733. 1963; Badhwar & Fernandez, *Edible Wild Pl. Himal.* 283. 1968; Misra, *Bull. Bot. Surv. India* 12: 136. 1970; Angely, *Fl. Anal. & Fitogeogr. S. Paulo*, ed. 1, 4: 839. 1970; Ellis, Wofford, & Chester, *Castanea* 36: 242. 1971; Burpee, *Burpee Seeds & Everything for Gard.* 56. 1972; Encke & Buchheim in Zander, *Handwörterb. Pflanzennam.*, ed. 10, 520 & 544. 1972; Huang, *Pollen Fl. Taiwan* 244, pl. 163, fig. 8--11. 1972; Moldenke, *Phytologia* 24: 218 & 232. 1972; G. W. Park, *Parks Flow. Book* 1973: 86. 1972; F. Perry, *Fls. World* 303 & 320. 1972; R. R. Stewart in Nasir & Ali, *Fl. West Pakist.* 608. 1972; R. J. Weaver, *Pl. Growth Subst. Agr.* 136. 1972; D. E. Clark, *Color in Your Gard.*, ed. 2, 18, 45, & 52. 1973; Jackson & Perkins, *Seedbook* 1972-1973: 18. 1973; Moldenke, *Phytologia* 25: 226 & 234. 1973; Moldenke in Woodson, Schery, & al., *Ann. Mo. Bot. Gard.* 60: 44--45 & 148. 1973; W. A. Burpee, *Burpee Seeds* 1974: 54. 1974; Lasser, Braun, & Steyerm., *Act. Bot. Venez.* 9: 36. 1974.

Additional illustrations: Burpee, *Burpee Seeds & Everything for Gard.* 56. 1972; Graf, *Exotica* 3: 1483. 1963; Huang, *Pollen Fl. Taiwan* pl. 163, fig. 8--11. 1972; F. Perry, *Fls. World* 303 (in color). 1972; Jackson & Perkins, *Seedbook* 1972-1973: 18 (in color).

1973; G. W. Park, Parks Flow. Book 1973: 86 (in color). 1973; W. A. Burpee, Burpee Seeds 1974: 54 (in color). 1974.

Burpee (1972) offers a cultivar named "Ruffled White" which he describes as "Superb sweetly scented variety producing large well-filled trusses of pure white flowers so freely the display has the appearance of a white carpet" and offers it in a packet of seeds for 75 cents, 1/16 ounce for \$2.25, 1/2 ounce for \$4.25, and 3/4 ounce for \$8. He offers "Rainbow Mixed Colors" ("Early flowering, upright plants. Ideal for pots, window boxes and bedding. Wide color range. Ht. 8 in."), "Ideal Florists' Mixed Colors" ("Earliest free-flowering strain with large flowers in an exceptionally wide range of colors. Most of them 'eyed'. Height 10 in."), "Sparkle Mixed Colors" ("Very good rich range of colors"), and "Finest Mixed Colors" ("Includes rose-pink, lavender, blue, white, violet, salmon-pink, scarlet and red shades. Many 'eyed'"). In his 1974 work he adds "Ruffled Pink" — a "delicate salmon-pink, better foliage, earlier and more vigorous than Miss Susie." He describes his "Ruffled" types as a "Unique multiflora gigantea type bearing semi-double ruffled flower clusters that look like balls of color", 10 inches tall. He also refers to these as "Burpee's Semi-Double".

Jackson & Perkins (1973) offer a "Florist Strain Mixed" Verbena which they describe as "will provide a low growing carpet of bright clear color all summer. Our variety grows a neat 8 to 10 inches high and spreads to 18 inches - quickly filling window boxes or flower pots. Florist Mix includes white, pink, purple, scarlet - many of which are accented with white in the center. The more of the sweet-smelling branches you cut, the more new shoots the hardy little plants will produce."

Lasser, Braun, & Steyermark (1974) record this plant as cultivated in Venezuela. My wife and I personally saw it widely cultivated in Ceylon, India, and Pakistan in 1974, and I saw it also growing in parks and home flowerbeds in Egypt that same year.

It seems most probable that the "Verbena phlogiflora Cham." of Huang (1972) is actually xV. hybrida. Ellis and his associates (1971) record xV. hybrida as growing wild in Lyon County, Kentucky, doubtless escaped from cultivation or merely persistent after cultivation. Misra (1970) asserts that it is a "Weed in shade" in Bihar, India.

J. W. Peterson describes the corollas of his collection, cited below, as "corolla lobes RHS Neyron Rose 623/1 distally, proximally RHS Neyron Rose 623; throat of lobes white". Bayliss encountered the plant in cultivation at 5600 feet elevation in South Africa.

Burkill (1966) says "The garden V. hybrida hort., seems to have been evolved by the hybridization of four species, V. chamaedryfolia, Juss., V. phlogiflora, Cham., V. incisa, Hook., and V. teucრიoides, Gill. and Hook.; but the history is not quite clear. All the four species are South American plants, and were brought together in gardens in the nineteenth century. V. hybrida does not fruit in Malaysia, as the climate is too moist. The presumed parents are perennials...."

[to be continued]